REMARKS

Claim status

Claims 1-40 were pending in the application. Claims 6, 11-13, 21, 26-28, 33, and 38-40 were withdrawn from consideration by the Examiner. Claims 1, 6, 11, 14, 29 and 38 are amended. In addition, upon entry of this amendment claims 10 and 37 should be withdrawn. Accordingly, upon entry of this amendment, claims 1-5, 7-9, 14-20, 22-25,k 29-32, and 34-36 will be pending.

The amendment to claim 6 was a formality. Support for the claim amendments to claims 1, 14 and 29 can be found on page 7, lines 24-27.

Species Election

The Examiner requires written affirmation of our provisional election, with traverse, of 1-deoxgalactonojirimycin (DGJ) as the first compound to search for in connection with claims 1-5,7-10, 14-20, 22-25, 29-32, and 34-37. In response, Applicants confirm provisional election of DGJ as the species. Applicants further submit that should the generic claims be found allowable (i.e. free of the prior art and nonobvious) pursuant to this response, then it follows *ipso facto* that the species claims are also free of the prior art. In this case, appropriate rejoinder of withdrawn claims is respectfully requested.

Objections to the Specification

The specification was objected to at page 5, lines 17-18, for referencing an incorrect published application. By this amendment, the reference to the published application has been removed. Accordingly, withdrawal of this objection is respectfully requested.

Claim Objections

Withdrawn claim 6 is objected to for containing two periods. By this amendment, claim 6 is amended to remove the extraneous period.

Claim Rejections Under 35 U.S.C. §112-Indefiniteness

Claims 4, 29-32 and 34-37 are rejected as indefinite because the Examiner contends that the claims lack sufficient antecedent bases for the term "the enzyme" in claims 4 and 30.

To address this rejection, we will direct the Examiner's attention to the beginning of claims 4 and 30 which recites "wherein the protein is an **enzyme**" Accordingly, it is respectfully asserted that proper antecedent basis is present in claims 4 and 30 and any dependent claims therefrom.

Claim Rejections Under 35 U.S.C. §112-Written Description

Claims 29-32 and 34-37 stand rejected as allegedly lacking written description for the phrase "disorders requiring gene therapy." The Examiner contends that this term encompasses only disorders that can be treated with gene therapy as the only therapy, and further contends that the specification does not describe such disorders.

To address this rejection, claim 29 is herein amended to recite a method for improving treatment in an individual being administered a therapeutic vector comprising a gene encoding a therapeutic protein, i.e., an individual being treated with gene therapy. Claim 29 as originally written was not intended to be limiting to disorders that for which gene therapy is the only treatment. The present claims encompass treatment of all disorders that *may* be treated using gene therapy and have been amended accordingly, as suggested by the Examiner. Such language is adequately supported in the specification as follows:

> The present invention provides a method of treatment for an individual having a disorder **treatable by gene therapy** (page 7, lines 6-7).
>
> There currently are about 1100 known inherited disorders characterized by protein deficiency or loss-of-function in a specific tissue. These disorders **may be treatable** by gene therapy in theory. The method of the present invention contemplates co-therapy for proteins currently suited for use in gene therapy that is available now or will be in the future (page 14, lines 16-20).
>
> There are numerous disorders involving defective genes other than enzymes involved in metabolic disorders that **can be treated** using gene therapy (page 19, lines 20-21).
>
> This method can be used in combination with any defective gene contemplated to be replaced using gene therapy (page 21, lines 7-8).

In addition, explicit claims directed to the treatment of Gaucher and Fabry diseases, both of which are currently treated using enzyme replacement therapy, is consistent with an interpretation that the claims are directed, *inter alia*, to diseases for which there are other treatments besides gene therapy.

In view of the forgoing, withdrawal of this rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. §112-Enablement

Claims 1-5, 7-10, 14-20, 22-25, 29-32 and 24-27 stand rejected for lacking enablement. The Examiner contends that while the specification enables a method for "improving" existing gene therapies by adding an ASSC, it does not enable a method of gene therapy. The Examiner interprets the claims as written as being directed to a method of gene therapy.

According to the Examiner, claims to a method of gene therapy are not enabled since gene therapy is an "unpredictable" art requiring extensive and undue experimentation. To support his contention, the Examiner provided numerous articles or abstracts which describe technical caveats

associated with human gene therapy, including delivery and expression (Verma et al., Anderson et al., Romano et al., Somia and Verma).

The Examiner suggests amending the claims to recite that the claimed method is an improvement to gene therapies that were in existence as of the filing date. In response, claims 1, 14, and 29 are amended herein as the Examiner suggested to recite that the method is a method for improving gene therapy.

Claim 1, as filed conveyed that the claimed method improves gene therapy by the phrase "increasing the level expression" of a protein expressed from a vector by administering a chaperone.

Since a patent application can only enable a technology that exists, it is asserted that the technology of gene therapy certainly existed as of the filing date of this application. Further, the principle of specific chaperone enhancement is applicable to all methods of gene therapy which involve expression of proteins from exogenously administered vectors, regardless of the vector, or the method of delivery or administration of the vector. There is no reasonable basis to contend that this method will not improve any gene therapy. Specific chaperone enhancement can improve expression levels of any protein.

The test for enablement involves a determination of whether the disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention.

The Examiner is concerned with enablement of gene therapies that do not yet exist, but agrees that the application enables gene therapies that do exist. In light of this fact, the concern for yet to be developed gene therapies is irrelevant. "... [A] patent document cannot enable technology that arises after the date of application. The law does not expect an applicant to disclose knowledge invented or developed after the filing date. Such disclosure would be

impossible *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1254; 70 USPQ 2d 1321, quoting *In re Hogan*, 559 F.2d 595, 605-06; 194 USPQ 527 (CCPA 1977)."

In view of the law cited above, Applicant contends that this rejection is confusing and incorrect.

The claims are directed to *improving* any gene therapy by providing increased expression of the protein expressed from a vector containing the gene encoding the protein. The Examiner states that the method is enabled as to then-existing gene therapies, which depend on expressing the protein from a gene encoding the protein that is in an expression vector which has been introduced into the cells (whether by direct or indirect transfer), as defined on page 8, lines 20-30, of the instant specification.[1] Accordingly, the claims are enabled.

Accordingly, in light of the amendment to the claims and the foregoing remarks, the claims are enabled and the Examiner should withdraw this rejection.

Claim Rejections Under 35 U.S.C. §103-Obviousness

Claims 1-5, 7-10, 14-19, 20, 22-25, 29-32 and 24-27 stand rejected as obvious over commonly-owned U.S. patent 6,274,597 to Fan et al. ("the '597 patent"), in view of U.S. patent 6,066,626 to Yew et al. ("Yew"). The Examiner contends that it would have been obvious to one of ordinary skill in the art to administer a vector containing a replacement gene and an ASSC from the combined teachings of the '597 patent and Yew.

The Examiner also rejects claims as obvious over Yew in view of commonly-owned patents 6,589,964 (the '964 patent), 6,599,919 (the '919 patent), and 6,774,135 (the '135 patent) to Fan et al. As above, the Examiner contends that the combined teachings would have led one of

[1] Note that any therapy, rendering gene therapy, will have varying degrees of success. What is clear in this case is that ASSC treatment will improve any chance for success.

skill in the art to administer DGJ in combination with a vector containing a replacement α-galactosidase A, in order to increase expression the protein encoded by the gene in the vector

In the interest of expediting prosecution, Applicants submit herewith supporting documentation, that the application under examination and each of the '597, '964 and '919 patents are currently owned by the same party, and were owned by the same party at the time the present invention was made. Attached at Exhibit 1, Tabs A-D, are copies of the assignments for the '597, '919, and '964 patents and for the present application, along with recordation forms acknowledging the assignee is Mount Sinai School of Medicine of New York University.

According to MPEP 706.02(1)(1)-(3), subject matter which is available as prior art under §102(e) is disqualified as prior art under §103(a) against the claimed invention if that subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. Since the present application was filed after November 29, 1999, when this rule went into effect, it is asserted that the '964 and '919 patents are not prior art.

Accordingly, withdrawal of the rejection over the '597, '964 and '919 patents is respectfully requested.

Double-Patenting

Claims 1-5, 7-10 14-17, 19, 20, 22-25, 29-32, and 34-37 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-7 of the '597 patent to Fan. According to the Examiner, the claims of the '597 patent render the present claims obvious.

Claims 1-5, 7-10 14-17, 19, 20, 22-25, 29-32, and 34-37 have been rejected under the judicially created doctrine of obviousness-type double patenting over claims 1, 3, 4, 7, 9, 10, 12, 13, 15-17, 21, 23-25, 29 and 31-36 of the '135 patent, in view of Yew.

Claims 1-5, 7-10 14-17, 19, 20, 22-25, 29-32, and 34-37 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-10 and 41-47 of the '964 patent, in view of Yew.

Claims 1-5, 7-10 14-17, 19, 20, 22-25, 29-32, and 34-37 are also rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-16 and 18-42 of the '919 patent in view of Yew.

Claims 18 and 19 are also rejected under the judicially created doctrine of obviousness-type double patenting over the claims of the '597, '964, '919, or '135 patents as indicated above, and Yew, and further in view of Hendricks.

To address these rejections, submitted herewith is a terminal disclaimer, disclaiming any patent term of a patent which issues from this application beyond the term of the '597, '964, '919, and '135 patents (all of which expire on the same date, and thus, have the same term).

CONCLUSION

Applicant respectfully requests entry of the foregoing amendments, remarks, and the terminal disclaimer in the file history of this application. In view of the above, applicant believes the pending claims are in condition for allowance and earnestly solicits allowance of the claims.

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Respectfully submitted,

By _____

Stephanie R. Amoroso, Ph.D.
Registration No.: 51,401
DARBY & DARBY P.C.
P.O. Box 5257
New York, New York 10150-5257
(212) 527-7700
(212) 527-7701 (Fax)
Attorneys/Agents For Applicant